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ARMY FAMILY HOUSING: PREFERENCES AND ATTITUDES ABOUT HOUSING INTERIORS. VOLUME II. PREFERENCES

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This report is the second volume of a three-volume study on Army family housing occupants' preferences and attitudes about housing interiors. Preferences for interior features are summarized, with listings of the specific issues and explanations of the differences in opinion among occupants at the 12 survey installations.

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FOREWORD

This survey was conducted for the Directorate of Military Construction, Office of the Chief of Engineers, under Project 4A664P17895, "Military Construction Systems Development," Task 03, "Military Housing," Work Unit 002, "Preferences of Occupants in Military Housing." The work was performed by the Architecture Branch of the Facilities Habitability and Planning Division (FH), U.S. Army Construction Engineering Research Laboratory (CERL).

The Technical Monitor at the Office of the Chief of Engineers was Mr. D. Swanson. COL M. D. Remus is Commander and Director of CERL and Dr. L. R. Shaffer is Deputy Director. Dr. R. M. Dinnat is Chief of FH.

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ARMY FAMILY HOUSING: PREFERENCES AND ATTITUDES ABOUT HOUSING INTERIORS

VOLUME II: PREFERENCES

1 INTRODUCTION

Background. Family housing that meets the expectations of potential volunteers is necessary if the goal of an all-volunteer Army is to be achieved. As a result, several surveys have been conducted in an effort to identify the specific elements of family housing that most significantly contribute to occupant satisfaction. One such survey was a study of Army family housing, performed by CERL in 1971 for the Office of the Chief of Engineers. The first phase focused on issues dealing with housing exteriors, neighborhoods, and communities.[1] It showed that family housing is an extremely important issue with married personnel and indicated strong preferences for the composition and design of ancillary installation facilities. The second phase, reported herein, focused on housing interiors.

Organization of the Report. There are three volumes to this report, each addressing a different topic. Volume I presents the overall results of the questionnaire and describes the methodology in depth; this volume addresses the issue of preferences for interior design features; and Volume III presents priority matrices and prediction models for occupant satisfaction with family housing features, based on occupants' ratings of their present quarters (Figure 1).

Purpose. The purpose of this study was to identify those features of family housing which contribute to occupant satisfaction and to develop design guidance with respect to those features.

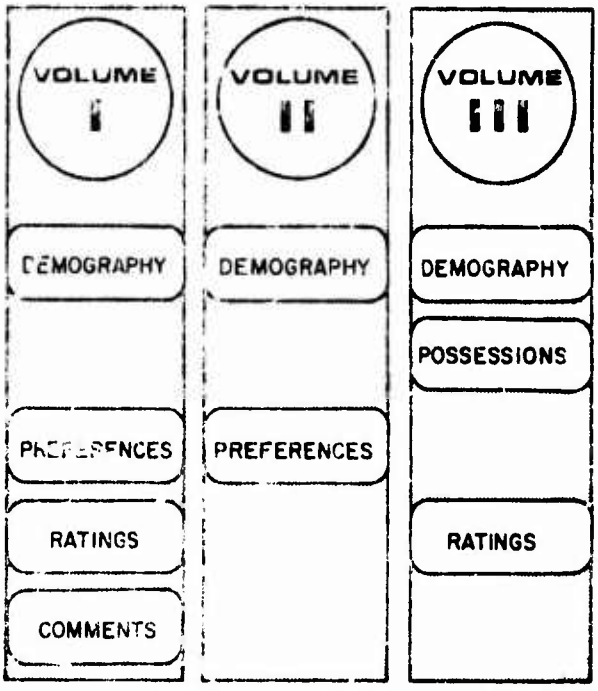

FIGURE 1. ORGANIZATION OF THE REPORT BY TOPIC.

2 EXPERIMENTAL DESIGN

Theoretical Considerations. Many factors can contribute to occupant satisfaction with housing—including physical, social, organizational, and economic environments. The current study focuses on the physical environment. Data were collected on demography, household possessions, preferences for interior design features, and opinions about existing design features.

Sampling. To isolate some of the variation in characteristics that affect responses, a nested design of sampling was selected (Figure 2). Twelve installations were chosen as survey sites on the basis of having housing projects that were occupied for the first time within the last 3 years (1970 was the starting date). By concentrating on the newer housing, new trends in design could be evaluated. However, older housing was also sampled (1956-1970 age bracket) to provide a basis for further comparison. Among the 12 installations, there were 35 housing projects and 169 floor plans (Figures 3 and 4).

[1] R. C. Knight, R. D. Neathammer, J. L. Pfeister, and R. M. Dinnat, *Attitudes and Preferences of Occupants of Military Family Housing Communities*, Technical Report D-22/AD 777769 (Construction Engineering Research Laboratory [CERL], April 1974).

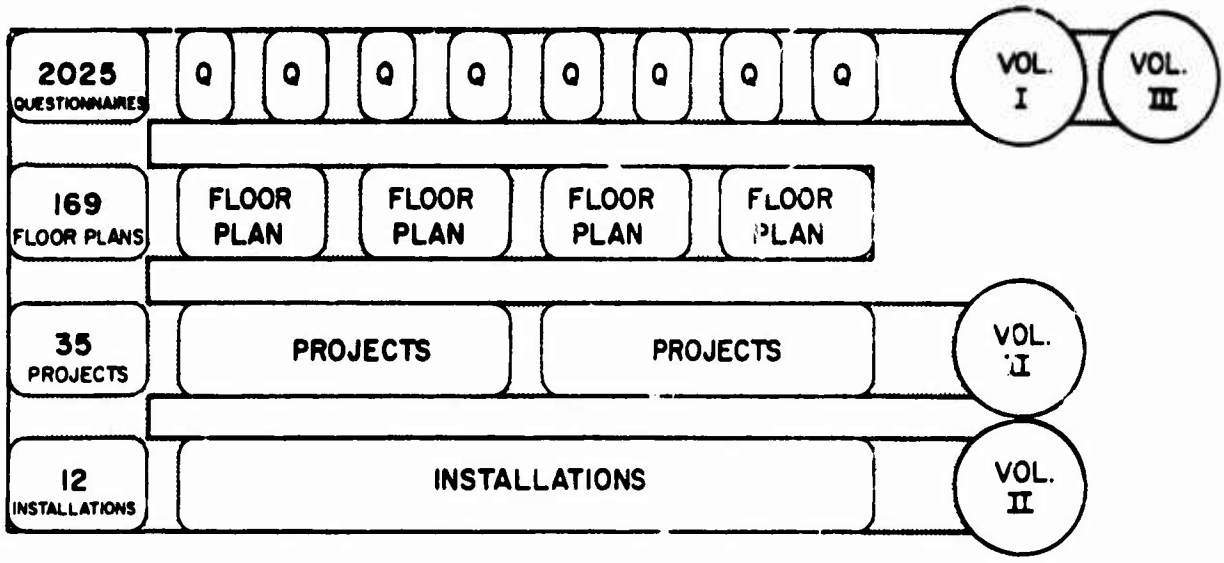

FIGURE 2. NESTED DESIGN FOR THE STUDY WITH LEVEL OF ANALYSIS BY VOLUME.

FIGURE 3. INSTALLATIONS INCLUDED IN SURVEY SAMPLE.

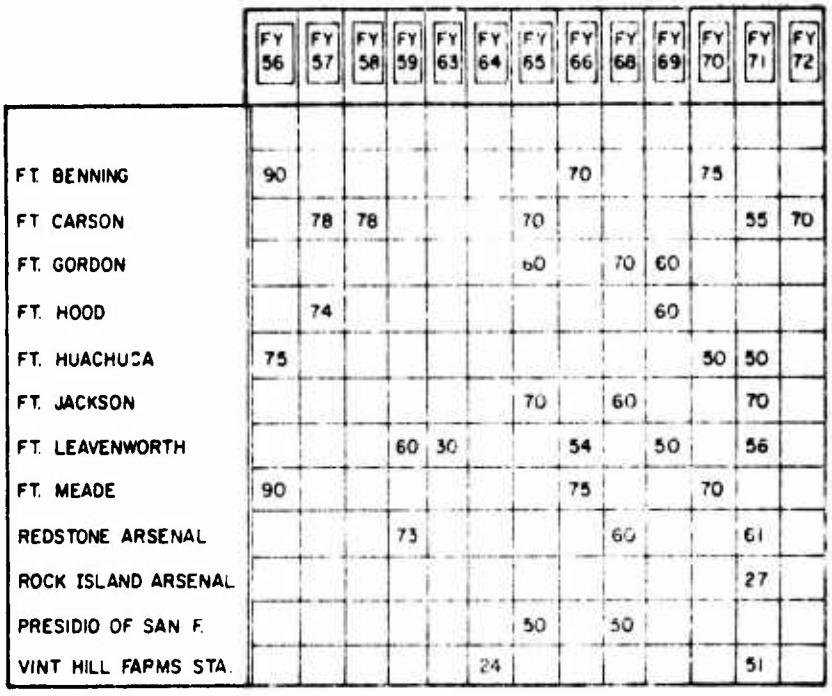

FIGURE 4. DISTRIBUTION OF THE SAMPLE BY UNITS WITHIN HOUSING PROJECTS INITIALLY OCCUPIED DURING FISCAL YEAR INDICATED.

At the first level of the nested design (installation, Figure 2), the intent was to isolate the variation in responses due to geographical location and differences between posts. It was thought that much of the response variation due to the age of the housing and the variation in quality of construction could be accounted for by sampling housing projects within installations (the second level). Variations in bedroom count, total living and storage space, and spatial arrangement were isolated by sampling several floor plans (see the third level in the nested design).

Sample Size. The sample size for the survey was established at the housing-project level in the nested design. As such, the sample size was determined so that if 50 percent of respondents answered a question in a certain way (e.g., *yes* or *dissatisfied*), 95 percent confidence bands in this 50 percent sample percentage are 10 percent in width. In this case, the 95 percent confidence limits are 45 percent and 55 percent.

After the sample had been set at the housing-project level, sampling at the floor-plan level was determined based on the percentage of housing units that each floor plan contributed to the total number of units in the project.

3 DATA-GATHERING INSTRUMENTS

Questionnaire. Data-gathering instruments included a questionnaire and photographic records of housing characteristics. The questionnaire was divided into four parts: demography, household possessions, preferences for housing alternatives and design features, and ratings of present quarters.

The 45-page questionnaire was saddle-bound and printed with a cover letter. Enclosed in each questionnaire were a sheet summarizing the results of two previous housing surveys and a copy of the respondent's floor plan. The Appendix presents those portions of the questionnaire, with filled-in responses, that are relevant to preferences.

Demography. The demographics section requested information on the husband's pay grade; the ages, education, and heights of the husband and wife; the age and sex of the children; and other key factors.

Possessions. An extensive check list of typical household possessions was included in the questionnaire packet to determine spatial requirements. By comparing the possession data for demographic categories with satisfaction levels, the amount and types of possessions can become a predictive tool.

Preferences. The preference section of the questionnaire examined those interior housing features that were judged the most desirable by the occupants. Items such as ceilings, wall and flooring materials and finishes, door styles, and range and refrigerator features were included.

Ratings. In this section, the respondents were requested to evaluate the heating, ventilation, air conditioning (HVAC), plumbing, materials and finishes, acoustics, fixtures, and other features of their present quarters. Adequate space was allowed for participants to elaborate on good and bad features, to give general comments, and to describe their quarters. These open-ended responses were subsequently analyzed for content. The semantic differential format was selected for most attitude measurements, since it requires minimal reading by the respondent, thus enabling rapid response.

Photographic Records. A photographic documentation was used to supplement the questionnaire data. Each survey field worker was issued a 35-mm single-lens reflex camera, with several rolls of color film, and was instructed to photograph general exterior shots of each complex, the complete interior of each floor-plan type, and the problem areas cited by the respondents. Approximately 3000 photographs were taken. These pictures helped to document the living conditions of the respondents at the time they completed the questionnaires.

4 ANALYSIS

Preparation. After the completed questionnaires were returned to CERL, the responses on the semantic differential scales were converted into numerical equivalents for keypunching. As a precaution against unacceptable responses, all questionnaires were "edited." For example, children's ages that were described by the respondent in ½-year intervals or months were not acceptable, and responses given in this manner were rounded to the next highest year. All fill-in comments from the questionnaires were content-analyzed and coded for keypunching. The number of questionnaires found suitable for analysis was 2025.

After keypunching and verifying, a cleaning program was used to detect any numbers outside the acceptable field limits. For example, a question with a semantic differential scale of one through seven possible responses could not be coded eight without detection. This step, in effect, verified part of the work done by manual editing.

Summary Analysis. Analyses that summarize and tabulate results are used to answer questions such as: "What were the preferences of the people?" or "What items were most preferred, second most preferred, etc.?" Summarization is usually accomplished by computing frequency tables or averages. Frequency tables were computed for all questions, while averages were computed for a few demographic questions such as age and height.

In some questions respondents were requested to rank items in order of preference—to analyze this type of question a preference score was computed for each item. The scores computed for each item were then used for establishing an overall ranking of the items within a question. In each question the preference score for each alternative was computed by multiplying the percentage of time that an item was selected as "most preferred" by four, as "second most preferred" by three, etc. The weighted percentages were then totaled for each item to yield a preference score for that item.

Comparative Analysis. Differences in responses from various groups of persons cannot be identified when results are only presented in summary analysis for the entire sample of respondents. Comparative analysis is required in order to compare responses of groups and answer questions such

as "Did the people in Complex A have the same views or preferences as those in Complex B?" Comparisons of groups becomes appropriate when some information suggests that they may respond differently or when questions are raised by summary results.

Comparative results are usually presented in a contingency table or cross-tabulation. Table 1 is an example of such a table: responses from five housing complexes are compared on a question with three alternatives about dining rooms. For each cell in the table, percent-of-row, percent-of-column, and percent-of-total are computed.

In order to test whether there was any difference in response between groups, a statistical test, called a Chi-squared test, can be run. If a Chi-test is significant, it indicates that the groups represented in a cross-tabulation responded differently with some level of probability and that the differences were not random. The test does not indicate which group or groups were different. That information must be determined by examining the percentages in the table. Referring to Table 1, the results of a Chi-squared test are presented below the cross-tabulation.

5 FINDINGS

Preferences. It was assumed that preferences were attributable to three factors: previous positive experiences, novelty, or previous negative experiences. It was recognized, however, that similar experiences could result in different preferences for different individuals. Or, a single individual could express different preferences with different evaluations of past experiences.

Consider the example of a current homeowner who is planning to build a new home. If the homeowner has always lived in houses with single-hung windows, and he has found them to be satisfactory, he may prefer them for his new home. However, he could conclude that all window styles are satisfactory, and as a result, choose a casement style or a style that may be currently in vogue.

Past experience can also affect a preference—particularly through avoidance of an undesirable alternative. If the homeowner has been dissatisfied with single-hung windows, he may prefer side-sliding windows even though he has had no first hand experience with them. Likewise, the double-hung window type may be rejected due to similarity with the single-hung style.

One factor that can influence preferences in housing features is the degree to which the occupant was allowed to choose the features in his present home. Military families are assigned to their quarters, and traditionally, have had no opportunity to voice their preferences for housing features. It is likely that occupants of military family housing are less satisfied with current features than are homeowners. If the homeowner's house was constructed to his specifications, he must have had some criteria for window-style selection that eliminated less desirable alternatives. Likewise, when purchasing a previously constructed house, the window-style preference may be sacrificed for the stronger preference for a two-car garage. In either case, the occupant has exercised his freedom of choice, and has developed some rationale for the features in his dwelling.

Of course, no preference judgment is influenced by one single factor, but rather many factors operating together. One hypothesis is that the most recent experiences exert the strongest influences in shaping preferences. This hypothesis appears to have been supported in only a few instances in this study. Since the average number of family housing quarters in which the respondents had resided was 4.5, it is possible that past experiences have merged to the extent that no single experience is very strong. However, conclusions about the influence of previous experience cannot be made, since little data were collected on past experience with housing features.

Interpretation. At each level of the nested design (Figure 2), analyses were conducted to determine if there were significant differences in responses among the respective subgroups of the general survey population. Differences in responses and inferences drawn from such analyses are presented by topic on the following pages (Chapter 6).

TABLE 1. Example Cross-Tabulation of Housing Project with Preference for Kitchen/Dining Relationship.

		VAR120			
	COUNT ROW PCT COL PCT TOT. PCT	DINING AREA 1.00	DINING L 2.00	DINING ROOM 3.00	ROW TOTAL
VAR004					
	59.00	1	14	50	65
		1.5	21.5	76.9	28.3
		20.0	28.6	28.4	
		.4	6.1	21.7	
	63.00	0	10	20	30
		0.0	33.3	66.7	13.0
		0.0	20.4	11.4	
		0.0	4.3	8.7	
	66.00	2	9	38	49
		4.1	18.4	77.6	21.3
		40.0	18.4	21.6	
		.9	3.9	16.5	
	69.00	0	7	34	41
		0.0	17.1	82.9	17.8
		0.0	14.3	19.3	
		0.0	3.0	14.8	
	71.00	2	9	34	45
		4.4	20.0	75.6	19.6
		40.0	18.4	19.3	
		9	3.9	14.8	
	COLUMN TOTAL	5	49	176	230
		2.2	21.3	76.5	100.0

Three alternatives to the question.

RAW CHI SQUARE = 6.78401 with 8 degrees of freedom

SIGNIFICANCE = .5601 (If this value is 0.05 or smaller, then it is 95 percent certain that differences between groups are real and not random. 0.5601 does not indicate any real difference between groups.)

A comparison of subgroups based on demographic characteristics was also made and it was found that preferences were the same regardless of subgroup. This result is consistent with findings reported in Volume III, *Predictors of Satisfaction with Housing Interiors*, where demography is shown to be a poor predictor of satisfaction with housing. It is conceivable that this study was not sufficiently sensitive to detect such demographic-based patterns, and that these must be investigated through studies designed specifically to identify demographic predictors for the preferences in, or satisfaction with, family housing. It has been suggested that a study of "life-style indicators" (possessions, use of leisure time, etc.) may be more appropriate; this subject is discussed in Volume III, *Predictors of Satisfaction with Housing Interiors*.

Inferences. Recommendations for each of the topic areas (window treatment, refrigerator features, etc.) appear in the form of "inferences" drawn from analysis of the preference data (Chapter 8). Because many of the alternatives in preference questions are not found in Army family housing and the real effect of such alternatives has not been evaluated, results are not conclusive, but at most must be considered the best interpretations of the responses.

Volume III of this report offers additional interpretations in the form of predictive models for housing features and for satisfaction with family housing.

Analyses were conducted for the following topics:

	results of comparative analysis (page #)	preference summary (page #)
refrigerators	16	66
ranges	21	66
ceiling finishes	27	66
wall finishes	34	66
flooring	40	67
closet-door style	47	67
kitchen/dining relationship	48	67
kitchen fixtures	49	67
bathroom fixtures	51	67
window treatment	54	67
patio location	57	67
housing features (general)	59	67
washer/dryer location	63	68
interior paint	64	68
improved family housing	65	68

Most of these topics are further subdivided by specific issues, such as refrigerator-door style. Variations in responses from installations or housing projects are discussed for each issue. In order to compare preferences of specific groups with overall preferences of the entire sample, the Appendix contains the overall responses for questions in the section dealing with preferences.

6 COMPARISON OF PREFERENCES

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REFRIGERATORS

MOST IMPORTANT FEATURE

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Refrigerator Features: 1. Completely automatic defrosting 2. Automatic ice maker 3. Larger freezer space than in present Army-furnished refrigerator 4. Ice-water dispenser in door 5. Larger refrigerated space than in present Army-furnished refrigerator 6. Rollers for easy moving 7. Quiet running 8. Choice of color 9. Choice of style	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None. Completely automatic defrosting was rated as the most important feature.

REFRIGERATORS

SECOND MOST IMPORTANT FEATURE

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Refrigerator Features: 1. Completely automatic defrosting 2. Automatic ice maker 3. Larger freezer space than in present Army-furnished refrigerator 4. Ice-water dispenser in door 5. Larger refrigerated space than in present Army furnished refrigerator 6. Rollers for easy moving 7. Quiet running 8. Choice of color 9. Choice of style	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	Note: Larger freezer space was rated [illegible] important feature.

REFRIGERATORS

THIRD MOST IMPORTANT FEATURE

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Refrigerator Features: 1. Completely automatic defrosting 2. Automatic ice maker 3. Larger freezer space than in present Army-furnished refrigerator 4. Ice-water dispenser in door 5. Larger refrigerated space than in present Army-furnished refrigerator 6. Rollers for easy moving 7. Quiet running 8. Choice of color 9. Choice of style	**Group 1:** Fort Carson **Group 2:** Fort Benning Fort Gordon Fort Hood Fort Huachuca Fort Jackson Vint Hill Farms Station **Group 3:** Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco	Group 1 rated feature 6 as third most important Group 2 rated feature 2 as third most important Group 3 rated feature 5 as third most important

REFRIGERATORS

FOURTH MOST IMPORTANT FEATURE

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Refrigerator Features: 1. Completely automatic defrosting 2. Automatic ice maker 3. Larger freezer space than in present Army-furnished refrigerator 4. Ice-water dispenser in door 5. Larger refrigerated space than in present Army-furnished refrigerator 6. Rollers for easy moving 7. Quiet running 8. Choice of color 9. Choice of style	**Group 1:** Fort Leavenworth Redstone Arsenal Rock Island Arsenal **Group 2:** Fort Benning Fort Carson Fort Hood Fort Jackson Vint Hill Farms Station **Group 3:** Fort Gordon Fort Huachuca Fort Meade Presidio of San Francisco	Group 1 rated feature 2 as fourth most important Group 2 rated feature 5 as fourth most important Group 3 rated feature 6 as fourth most important

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Refrigerator Door Styles: 1. Single door with inside door for freezer 2. Double door with freezer on top 3. Double door with freezer on bottom 4. Side-by-side double door style	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None. The side-by-side door style was preferred.

RANGES

MOST IMPORTANT FEATURE

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
List of Features: 1. Oven timer 2. Drawer for pots and pans 3. Glass oven window 4. Surface-unit timer 5. Choice of color 6. Backsplash splatter panel 7. Ceramic cook-top surface 8. Self cleaning 9. Timer for appliance outlet 10. Rotisserie in oven 11. Style of range 12. Size of range	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None -- The self-cleaning ovens were rated as the most important feature

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
List of Features: 1. Oven timer 2. Drawer for pots and pans 3. Glass oven window 4. Surface-unit timer 5. Choice of color 6. Back-edge splatter panel 7. Ceramic, cook-top surface 8. Self-cleaning 9. Timer for appliance outlet 10. Rotisserie in oven 11. Style of range 12. Size of range	**Group 1:** Fort Hood Presidio of San Francisco **Group 2:** Fort Benning Fort Carson Fort Gordon Fort Huachuca Fort Jackson Rock Island Arsenal Vint Hill Farms Station **Group 3:** Fort Leavenworth Fort Meade Redstone Arsenal	Group 1 rated feature 1 as second most important Group 2 rated feature 3 as second most important Group 3 rated feature 12 as second most important

CERL		**RANGES** **THIRD MOST IMPORTANT FEATURE**

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
List of Features: 1. Oven timer 2. Drawer for pots and pans 3. Glass oven window 4. Surface-unit timer 5. Choice of color 6. Back-edge splatter panel 7. Ceramic, cook-top surface 8. Self-cleaning 9. Timer for appliance outlet 10. Rotisserie in oven 11. Style of range 12. Size of range	**Group 1:** Fort Benning Fort Huachuca Fort Leavenworth Rock Island Arsenal Vint Hill Farms Station **Group 2:** Fort Hood Fort Meade Redstone Arsenal **Group 3:** Fort Jackson **Group 4:** Fort Carson Fort Gordon Presidio of San Francisco	Group 1 rated feature 1 as third most important. Group 2 rated feature 3 as third most important. Group 3 rated feature 6 as third most important. Group 4 rated feature 12 as third most important.

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
List of Features: 1. Oven timer 2. Drawer for pots and pans 3. Glass oven window 4. Surface-unit timer 5. Choice of color 6. Back-edge splatter panel 7. Ceramic, cook-top surface 8. Self-cleaning 9. Timer for appliance outlet 10. Rotisserie in oven 11. Style of range 12. Size of range	**Group 1:** Fort Gordon **Group 2:** Fort Carson Fort Hood Fort Meade **Group 3:** Fort Leavenworth Presidio of San Francisco **Group 4:** Fort Jackson **Group 5:** Fort Benning Redstone Arsenal **Group 6:** Fort Huachuca Rock Island Arsenal Mint Hill Farms Station	Group 1 rated feature 1 as fourth most important. Group 2 rated feature 2 as fourth most important. Group 3 rated feature 3 as fourth most important. Group 4 rated feature 6 as fourth most important. Group 5 rated feature 11 as fourth most important. Group 6 rated feature 12 as fourth most important.

		RANGES STYLE

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Style of Range: 1. Free standing range 2. Oven and cook top built into kitchen cabinets	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None - Built in ovens and cook tops were provided

RANGES

SIZE

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Type of Range: 1 Single oven, oven below cook top 2 Single oven, oven at eye level 3 Double ovens side by side 4 Double ovens one at eye level and one below cook top	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None. Double ovens, one at eye level and one at [illegible] cook top were preferred

		CEILING **BEDROOMS**

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Ceiling Finishes: 1. Smooth finish 2. Sand finish 3. Textured or swirled finish 4. Acoustical tile or panels	**Group 1:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Vint Hill Farms Station **Group 2:** Rock Island Arsenal **Group 3:** Fort Huachuca Presidio of San Francisco	Group 1 preferred finish 1 Group 2 preferred finish 3 Group 3 preferred finish 4.

CEILING

BATHROOMS

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Ceiling Finishes: 1. Smooth finish 2. Sand finish 3. Textured or swirled finish 4. Acoustical tile or panels	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None. Smooth finished ceilings were preferred for the bathrooms.

CERL

CEILING

FAMILY ROOM

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Ceiling Finishes: 1. Smooth finish 2. Sand finish 3. Textured or swirled finish 4. Acoustical tile or panels	**Group 1:** Rock Island Arsenal **Group 2:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Presidio of San Francisco Vint Hill Farms Station	Group 1 preferred finish 3 Group 2 preferred finish 4

CERL		CEILING LIVING ROOM

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Ceiling Finishes: 1. Smooth finish 2. Sand finish 3. Textured or swirled finish 4. Acoustical tile or panels	**Group 1:** Fort Hood Fort Huachuca **Group 2:** Fort Benning Fort Carson Fort Gordon Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	Group 1 preferred finish 4 Group 2 preferred finish 3

CEILING

DINING ROOM

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Ceiling Finishes: 1. Smooth finish 2. Sand finish 3. Textured or swirled finish 4. Acoustical tile or panels	**Group 1:** Fort Jackson **Group 2:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	Group 1 preferred finish 1. Group 2 preferred finish 3.

CERL

CEILING

KITCHEN

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Ceiling Finishes: 1. Smooth finish 2. Sand finish 3. Textured or swirled finish 4. Acoustical tile or panels	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None - Smooth finished ceilings were preferred for the kitchens

CERL		CEILING HALLWAYS

ISSUE	LARGFST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Ceiling Finishes: 1. Smooth finish 2. Sand finish 3. Textured or swirled finish 4. Acoustical tile or panels	**Group 1:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Vint Hill Farms Station **Group 2:** Rock Island Arsenal Presidio of San Francisco	Group 1 preferred finish 1. Group 2 preferred finish 3.

		WALL FINISHES **BATHROOMS**

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Wall Finishes: 1. Smooth finish (painted) 2. Sand finish (painted) 3. Textured finish (painted) 4. Wood paneling 5. Patterned finish (such as washable wall paper, vinyl patterned panels, etc.) 6. Plastic tile 7. Ceramic tile	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	Note: Ceramic tile was preferred for bathrooms.

WALL FINISHES

FAMILY ROOM

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Wall Finishes: 1. Smooth finish (painted) 2. Sand finish (painted) 3. Textured finish (painted) 4. Wood paneling 5. Patterned finish (such as washable wall paper, vinyl patterned panels, etc.) 6. Plastic tile 7. Ceramic tile	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None — Wood paneling was preferred for the family room.

CERL		**WALL FINISHES** **LIVING ROOM**

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Wall Finishes: 1. Smooth finish (painted) 2. Sand finish (painted) 3. Textured finish (painted) 4. Wood paneling 5. Patterned finish (such as washable wall paper, vinyl patterned panels, etc.) 6. Plastic tile 7. Ceramic tile	**Group 1:** Fort Leavenworth Redstone Arsenal Rock Island Arsenal Presidio of San Francisco * Vint Hill Farms Station **Group 2:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Meade Presidio of San Francisco *	Group 1 preferred finish 1. Group 2 preferred finish 4 * At Presidio of San Francisco the modes for options 1 and 4 were identical

WALL FINISHES

DINING ROOM

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Wall Finishes: 1. Smooth finish (painted) 2. Sand finish (painted) 3. Textured finish (painted) 4. Wood paneling 5. Patterned finish (such as washable wall paper, vinyl patterned panels, etc.) 6. Plastic tile 7. Ceramic tile	**Group 1:** Fort Benning Fort Carson Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station **Group 2:** Fort Gordon Fort Hood	Group 1 preferred finish 1. Group 2 preferred finish 4

CERL		**WALL FINISHES** **KITCHEN**

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Wall Finishes: 1. Smooth finish (painted) 2. Sand finish (painted) 3. Textured finish (painted) 4. Wood paneling 5. Patterned finish (such as washable wall paper, vinyl patterned panels, etc.) 6. Plastic tile 7. Ceramic tile	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None Smooth finishes were preferred for the kitchens

WALL FINISHES

HALLWAYS

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Wall Finishes: 1. Smooth finish (painted) 2. Sand finish (painted) 3. Textured finish (painted) 4. Wood paneling 5. Patterned finish (such as washable wall paper, vinyl patterned panels, etc.) 6. Plastic tile 7. Ceramic tile	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None — Smooth finishes were preferred for hallways.

CERL		**FLOORING** **BEDROOMS**

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Types of Flooring: 1. Asphalt tile 2. Vinyl tile 3. Sheet vinyl 4. Hardwood 5. Ceramic tile 6. Carpeting	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None. Carpeting was preferred for the bedroom.

CERL		**FLOORING** **BATHROOMS**

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Types of Flooring: 1. Asphalt tile 2. Vinyl tile 3. Sheet vinyl 4. Hardwood 5. Ceramic tile 6. Carpeting	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None. Ceramic tile was preferred for the bathrooms.

		FLOORING **FAMILY ROOM**

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Types of Flooring: 1. Asphalt tile 2. Vinyl tile 3. Sheet vinyl 4. Hardwood 5. Ceramic tile 6. Carpeting	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None. Carpeting was preferred for the family room

CERL		**FLOORING** **LIVING ROOM**

ISSUE	LARGEST DIFFERENCES INVOLVE	EXPLANATION OF DIFFERENCES
Types of Flooring: 1. Asphalt tile 2. Vinyl tile 3. Sheet vinyl 4. Hardwood 5. Ceramic tile 6. Carpeting	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None. Carpeting was preferred for the living room

FLOORING

DINING ROOM

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Types of Flooring: 1. Asphalt tile 2. Vinyl tile 3. Sheet vinyl 4. Hardwood 5. Ceramic tile 6. Carpeting	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None. Carpeting was preferred for the dining room

CERL		**FLOORING** **KITCHEN**

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Types of Flooring: 1. Asphalt tile 2. Vinyl tile 3. Sheet vinyl 4. Hardwood 5. Ceramic tile 6. Carpeting	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None. Vinyl tile was preferred for kitchens

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Types of Flooring: 1. Asphalt tile 2 Vinyl tile 3. Sheet vinyl 4. Hardwood 5. Ceramic tile 6. Carpeting	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None. Carpeting was preferred for hallways.

CLOSET-DOOR STYLE

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Closet-Door Styles: 1. Standard door 2. Bi-fold 3. Side-sliding	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None among installations. Side-sliding closet doors were preferred. Random differences were found between housing projects but no trends were identifiable.

KITCHEN DINING RELATIONSHIP

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Kitchen-Dining Room Relationship: 1. Dining area 2. Dining "L" 3. Dining room	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station *	None among installations. The separate kitchen and dining room configuration was preferred. * The FY 74 project at Vint Hill Farms Station preferred a dining "L" configuration—no explanation has been determined.

		KITCHEN-EXHAUST SYSTEM
ISSUE	**LARGEST DIFFERENCES INVOLVE:**	**EXPLANATION OF DIFFERENCES**
Kitchen-Exhaust System: 1. Wall style 2. Hood style	**Group 1:** Rock Island Arsenal **Group 2:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Presidio of San Francisco Vint Hill Farms Station	Group 1 preferred style 1. Group 2 preferred style 2.

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Kitchen-Sink Styles: 1. Single bowl 2. Double bowl	**None Among:** Fort Bliss Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	Double-bowled kitchen sinks were preferred

		BATHROOM SINKS

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Bathroom-Sink Styles: 1. Wall hung basin 2. Basin in vanity	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None The basin in vanity style was preferred

		BATHING TYPE

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Bathing Types. 1. Tub alone 2. Shower stall 3. Tub and shower combination	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None. The tub and shower combination was preferred

SHOWER HEAD

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Shower-Head Types: 1 Fixed head 2 Hand-held flexible head	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None - Fixed-shower heads [illegible]

CERL		**WINDOW HEIGHT**

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Window Height: 1. Ankle height 2. Knee height 3. Waist height	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth • Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	None - Waist height windows were preferred • The 1959, 1963, 1969, and 1971 housing projects at Fort Leavenworth indicated a preference for windows at waist height. The 1966 housing project in Fort Leavenworth indicated a preference for windows at knee height. No explanation for this difference has been determined.

		WINDOW STYLE

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Window Styles: 1. Awning style 2. Side-sliding 3. Single-hung 4. Double-hung 5. Casement	**Group 1:** Fort Benning * Fort Carson Fort Huachuca Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station ** **Group 2:** Fort Gordon Fort Hood Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Vint Hill Farms Station **	Group 1 preferred style 2 Group 2 preferred style 4 * The 1956 and 1970 housing projects at Fort Benning indicated a preference for side-sliding windows. The 1966 housing project at Fort Benning indicated a preference for double-hung windows. ** At Vint Hill Farms Station, the modes for options 2 and 4 were identical.

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Window Coverings: 1. Drapes 2. Venetian blind (occupant supplies drapes or curtains) 3. Shades (occupant supplies drapes or curtains)	**Group 1:** Fort Carson Fort Huachuca Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station **Group 2:** Fort Benning Fort Gordon Fort Hood * Fort Jackson Fort Meade Redstone Arsenal **Group 3:** Fort Leavenworth	Group 1 preferred option 1. Group 2 preferred option 2. Group 3 preferred option 3. * The 1959 housing project at Fort Hood indicated a preference for venetian blinds. The 1969 housing project at Fort Hood indicated a preference for shades. The explanation for these differences has not been determined.

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Location of Patio Entrance: 1. From master bedroom 2. From living room 3. From dining room 4. From family room 5. From kitchen	**Group 1:** Fort Carson **Group 2:** Fort Benning Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenwerth Fort Meade Redstone Arsenal • Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	Group 1 preferred location 3 Group 2 preferred location 4. • The 1959 and 1968 housing projects at Redstone Arsenal preferred the location of an entrance to the patio from the family room. The 1971 housing project at Redstone Arsenal preferred the location of an entrance to the patio from the living room. No explanation for this difference has been determined

		PATIO DOOR

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Patio-Door Styles: 1. Standard door with windows 2. Sliding-glass door	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	Note: Side-sliding glass patio doors were preferred

CERL		**HOUSING FEATURES** **MOST IMPORTANT FEATURE**

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
List of Features: 1. Central air conditioning 2. Sidewalks in housing area 3. Patio 4. Carpeting in living room and bedrooms 5. Carport 6. Enlarged living room 7. Enlarged dining room 8. Eating area in kitchen 9. Playgrounds (both for toddlers and older children) 10. Storm doors and windows 11. Soundproofing between units (horizontal and vertical) 12. Fenced-in yard (for children or pets) 13. Privacy fence between units	**Group 1:** Fort Carson **Group 2:** Presidio of San Francisco **Group 3:** Fort Benning Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Vint Hill Farms Station	Group 1 rated feature 12 as most important Group 2 rated feature 11 as most important Group 3 rated feature 1 as most important

CERL		**HOUSING FEATURES** **SECOND MOST IMPORTANT FEATURE**

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
List of Features: 1. Central air conditioning 2. Sidewalks in housing area 3. Patio 4. Carpeting in living room and bedrooms 5. Carport 6. Enlarged living room 7. Enlarged dining room 8. Eating area in kitchen 9. Playgrounds (both for toddlers and older children) 10. Storm doors and windows 11. Soundproofing between units (horizontal and vertical) 12. Fenced-in yard (for children or pets) 13. Privacy fence between units	**Group 1:** Fort Carson **Group 2:** Fort Leavenworth **Group 3:** Fort Meade **Group 4:** Rock Island Arsenal Vint Hill Farms Station **Group 5:** Presidio of San Francisco **Group 6:** Fort Benning Fort Gordon Fort Hood Fort Huachuca Fort Jackson Redstone Arsenal	Group 1 rated feature 4 as second most important Group 2 rated feature 5 as second most important Group 3 rated feature 6 as second most important Group 4 rated feature 11 as second most important Group 5 rated feature 5 as second most important Group 6 rated feature 12 as second most important

HOUSING FEATURES

THIRD MOST IMPORTANT FEATURE

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
List of Features: 1. Central air conditioning 2. Sidewalks in housing area 3. Patio 4. Carpeting in living room and bedrooms 5. Carport 6. Enlarged living room 7. Enlarged dining room 8. Eating area in kitchen 9. Playgrounds (both for toddlers and older children) 10. Storm doors and windows 11. Soundproofing between units (horizontal and vertical) 12. Fenced-in yard (for children or pets) 13. Privacy fence between units	**Group 1:** Fort Benning Fort Hood Fort Leavenworth **Group 2:** Fort Carson **Group 3:** Fort Gordon Fort Huachuca Presidio of San Francisco **Group 4:** Fort Jackson Redstone Arsenal **Group 5:** Fort Meade **Group 6:** Rock Island Arsenal **Group 7:** Vint Hill Farms Station	Group 1 rated feature 5 as third most important Group 2 rated feature 1 as third most important Group 3 rated feature 4 as third most important Group 4 rated feature 11 as third most important Group 5 rated feature 8 as third most important Group 6 rated feature 6 as third most important Group 7 rated feature 12 as third most important

HOUSING FEATURES

FOURTH MOST IMPORTANT FEATURE

ISSUE	LARGEST DIFFERENCES INVOLVE	EXPLANATION OF DIFFERENCES
List of Features: 1. Central air conditioning 2. Sidewalks in housing area 3. Patio 4. Carpeting in living room and bedrooms 5. Carport 6. Enlarged living room 7. Enlarged dining room 8. Eating area in kitchen 9. Playgrounds (both for toddlers and older children) 10. Storm doors and windows 11. Soundproofing between units (horizontal and vertical) 12. Fenced-in yard (for children or pets) 13. Privacy fence between units	**Group 1:** Fort Benning Fort Leavenworth **Group 2:** Fort Carson Fort Gordon Fort Meade Redstone Arsenal **Group 3:** Fort Hood Fort Jackson Rock Island Arsenal Vint Hill Farms Station **Group 4:** Presidio of San Francisco **Group 5:** Fort Huachuca	Group 1 rated feature 11 as fourth most important Group 2 rated feature 5 as fourth most important Group 3 rated feature 12 as fourth most important Group 4 rated feature 2 as fourth most important Group 5 rated feature 5 as fourth most important

		WASHER DRYER LOCATION

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Location of Washer and Dryer: 1 Adjacent to kitchen in a separate utility room 2 In a bathroom closet 3 In a kitchen closet	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Isl. Arsenal Presidio of San Francisco Vint Hill Farms Station	Location 1 was preferred

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Interior Wall Paint: 1. Walls be painted in neutral colors (such as off-white) so that it is easier to maintain color schemes when moving from place to place 2. Occupants be allowed to select wall colors even though it might create problems when moving in or leaving	**None Among:** Fort Benning Fort Carson Fort Gordon Fort Hood Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Redstone Arsenal Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	Neutral colors were preferred for walls

ISSUE	LARGEST DIFFERENCES INVOLVE:	EXPLANATION OF DIFFERENCES
Improving Family Housing: 1. Improved quality of construction within present space regulations 2. Increased space of living quarters with the present quality of construction	**Group 1:** Fort Hood * Redstone Arsenal **Group 2:** Fort Benning Fort Carson ** Fort Gordon Fort Huachuca Fort Jackson Fort Leavenworth Fort Meade Rock Island Arsenal Presidio of San Francisco Vint Hill Farms Station	Group 1 preferred option 2 Group 2 preferred option 1 * The 1959 housing project at Fort Hood preferred increased space of living quarters with the present quality of construction. The 1969 housing project at Fort Hood preferred improved quality of construction within present space regulations. ** The 1957, 1958, and 1965 housing projects at Fort Carson preferred increased space of living quarters with the present quality of construction. The 1971 and 1972 housing projects at Fort Carson preferred improved quality of construction within present space regulations.

7 CONCLUSION

Survey results indicate that many housing design features are strongly and consistently preferred. These preferences do not appear to be a function of demographic variables or the conditions under which the respondents were living at the time of the survey.

Action toward improving housing based on the knowledge of preferences for features must proceed carefully. Technological advancements, mass marketing techniques by manufacturers, and social "pressures" can render previous data obsolete in a very short time. The options for features presented in the questionnaire can be described as reasonable but minimal. This questionnaire was intended to identify features of family housing that contribute to occupant satisfaction.

Volume III of this report presents predictive models for the improvement of family housing interior design features, based on occupant ratings of present quarters. Since many variables are considered, preferences by themselves have limited value. In conjunction with the prediction models, however, preference data can more confidently be used as a guideline for improvement.

8 SUMMARY OF PREFERENCES

Refrigerators. (for analysis results see pages 16-20.)

Refrigerator features should include:

1) completely automatic defrosting
2) increased freezer space (as opposed to present size)
3) larger refrigerated space.

Refrigerators should be side-by-side, double-door style.

The choice of fourth most important feature cannot be accurately determined due to randomness of data.

Ranges. (for analysis results see pages 21-26.)

Generally, ranges should be equipped with:

1) self-cleaning ovens
2) glass oven windows
3) increased size (32 in. at present)
4) oven timer.

The range should have a double oven, one at eye level and one below the cook top—all built into the kitchen cabinets.

An increase from 32 in. to, perhaps, 42 in. would probably not be satisfactory; based on the response to type of range, two ovens are the desired form of increased size.

Ceiling Finishes. (for analysis results see pages 27-33.)

By room, ceiling finishes should be:

1) bedrooms—smooth finish
2) bathrooms—smooth finish
3) family room—acoustical tile or panels
4) living room—textured finish
5) dining room—textured finish
6) kitchen—smooth finish
7) hallways—smooth finish.

Wall Finishes. (for analysis results see pages 34-39.)

Wall finishes should be provided as follows:

1) bedrooms—smooth finish (painted)
2) bathrooms—ceramic tile
3) family room—wood paneling
4) living room—wood paneling or smooth finish (painted)
5) dining room—smooth finish (painted)
6) kitchen—smooth finish (painted)
7) hallways—smooth finish (painted).

The preference for living-room walls of wood paneling may be explained by the desire for an informal living space—i.e., a family room. Less than one-half of the installations that selected wood paneling in the living room selected wood paneling in the dining room. In these cases, the difference between preferred living and dining treatments can also be explained by the desire (see kitchen/dining relationship) for clear definitions of interior spaces.

Flooring. (for analysis results see pages 40-46.)

By room, flooring should be:
1) bedrooms—carpeting
2) bathrooms—ceramic tile
3) family room—carpeting
4) living room—carpeting
5) dining room—carpeting
6) kitchen—vinyl tile
7) hallways—carpeting.

Closet-Door Style. (for analysis results see page 47.)

Closet doors should be side-sliding.

Kitchen/Dining Relationship. (for analysis results see page 48.)

Kitchen and dining rooms should be separate rooms, or at least, spatially well defined.

Kitchen Fixtures. (for analysis results see pages 49-50.)

Kitchen sinks should be double bowl. Generally, kitchen-exhaust systems should be hood style.

Some projects indicated a preference for wall-style exhaust systems. In most cases, the projects indicated a preference for whichever style they had. Exceptions to this were usually where a project had a hood style but indicated a preference for a wall style. One hypothesis that could be investigated is that the hood-style exhaust system that they have does not function well.

Bathroom Fixtures. (for analysis results see pages 51-53.)

Bathroom sink styles should be basin in vanity. Bathrooms should have a tub and shower combination. The shower head should be fixed.

It is possible that there was some misunderstanding by the respondents concerning the alternatives presented in this question. The hand-held flexible type of shower head would seem to offer greater versatility than the fixed-head style. The respondents may not have understood that the hand-held type does not always have to be held—when not being used in this manner, a bracket holds it and operation is much the same as for the more conventional fixed head.

Window Treatment. (for analysis results see pages 54-56.)

The following window treatments are the most preferred, in order of preference:
1) waist-height windows
2) double-hung windows
3) venetian blinds to be furnished by the government.

The question concerning window heights was poorly constructed. It is quite likely that different height windows are preferred for different areas in the home. The question did not consider this possibility.

Although this preference (double-hung windows) is only slightly stronger than that for the side-sliding, it must be noted that the respondents at housing projects that had the double-hung style never indicated a preference for side-sliding windows; those respondents having the side-sliding type chose either the side-sliding or double-hung as their preference.

The question on venetian blinds may have been too limited.

Patio Location. (for analysis results see pages 57-58.)

The entrance to the patio should be from the family room. Patio doors should be side-sliding glass doors.

The strong preference for the entrance to the patio from the family room might be indicative of the desire for family rooms, since most projects do not have them.

Housing Features. (for analysis results see pages 59-62.)

Specific housing features seem to have regional appeal. Central air conditioning was considered top priority by an overwhelming majority at 10 of the 12 installations sampled, while Fort Carson, CO, and Presidio of San Francisco, CA, chose other features (fenced-in yard and soundproofing between units, respectively) as most important. For the second most important feature, the preference for fenced-in yard, while strong, was far from unanimous. Beyond these two choices, the selections for third and fourth most important feature were randomly distributed.

Climatological and topographical considerations may impact preferences for housing features. Housing preferences that may be regional in nature should be independently studied.

Washer/Dryer Location. (for analysis results see page 63.)

Washers and dryers should be located adjacent to the kitchen, in a separate utility room.

Interior Paint. (for analysis results see page 64.)

Walls should be painted in neutral colors (such as off-white), so that it is easier to maintain color schemes when moving from place to place.

Improving Family Housing. (for analysis results see page 65.)

There was a correlation between the age of the housing project and responses to this question: respondents in newer housing projects, regardless of location, felt that there should be improved quality of construction within present space regulations; residents of older housing preferred increased space within present quality standards. Since square-footage allowances have increased over the years, improvements in the quality of family housing should now be emphasized.

APPENDIX:

PORTIONS OF ARMY FAMILY HOUSING QUESTIONNAIRE WITH RESULTS

ARMY FAMILY HOUSING:
PREFERENCES AND ATTITUDES
ABOUT HOUSING INTERIORS

May - July 1973

U.S. Army Corps of Engineers
Construction Engineering Research Laboratory
P.O. Box 4005
Champaign, Illinois 61820

Section A - You and Your Family

HUSBAND

Questions 1-8 pertain only to the husband.

1. What is your (husband's) age? 33 years of age

2. What is your (husband's) height? 5 ft. 10 1/2 in.

3. What is your (husband's) page grade? *(Circle one number)*

E-1 Private (E1)	01	.1%
E-2 Private (E2)	02	.1%
E-3 Private First Class	03	.1%
E-4 Corporal or Specialist Four	04	2.4%
E-5 Sergeant or Specialist Five	05	16.5%
E-6 Staff Sergeant or Specialist Six	06	26.6%
E-7 Sergeant First Class, Platoon Sergeant or Specialist Seven	07	19.1%
E-8 Master Sergeant or First Sergeant	08	5.5%
E-9 Staff Sergeant Major or Command Sergeant Major	09	1.7%
W-1 Warrant Officer	10	.2%
W-2 Chief Warrant Officer	11	.8%
W-3 Chief Warrant Officer	12	.4%
W-4 Chief Warrant Officer	13	.1%
O-1 Second Lieutenant	14	.9%
O-2 First Lieutenant	15	1.6%
O-3 Captain	16	5.8%
O-4 Major	17	13.2%
O-5 Lieutenant Colonel	18	3.6%
O-6 Colonel	19	.9%
O-7 or Brigadier General or above	20	.1%

4. How long have you (the husband) been in the army? 13.461 years

5. During your (husband's) Army career, how many different family housing quarters have you lived in?

4.451 number of quarters

6. Are you (the husband) . . . (Circle one number)

Stationed away from family, or	1	2.0%
Living with family?	2	98.0%

7. What is the highest grade of school you (the husband) have completed? (Circle one number)

	.1%						.2%	.5%
Grade School	01	02	03	04	05	06	07	08
	.7%	1.1%	1.2%	52.4%				
High School	09	10	11	12				
				8.7%	8.5%	2.5%	10.5%	
College or Technical School				13	14	15	16	
	14.0%							
Beyond College	17							

MEAN=13.358

8. Are you (the husband) in the service for a career?

Yes	1	83.4%
No	2	5.9%
Undecided	3	10.7%

WIFE

Questions 9-15 pertain only to the wife.

9. What is your (wife's) age? *31* years of age

10. What is your (wife's height? *5* ft. *4 1/2* in.

11. Where did you (the wife) spend most of your childhood (grade school, high school years)?

U.S.A.	1	*84.3%*
Foreign country *(Specify)*	2	*15.7%*

12. What is the highest grade of school you (the wife) have completed? *(Circle one)*

Grade School	01 *.1%*	02 *.1%*	03	04	05	06 *.2%*	07 *.4%*	08 *2.5%*
High School	09 *2.9%*	10 *6.3%*	11 *6.5%*	12 *45.9%*				
College or Technical School	13 *9.8%*	14 *8.7%*	15 *4.0%*	16 *9.4%*				
Beyond College	17 *3.2%*							

MEAN=12.506

13a. Are you (the wife) employed?

Yes	1	*17.7%*
No *(Skip to q.14)*	2	*82.3%*

b. If yes, is your (wife's) place of work . . .

Outside the home, or	1	*93.3%*
In the home (paid employment) . . .	2	*6.7%*

All of the questions remaining in this questionnaire can be answered either by the husband or by the wife.

CHILDREN

14a. Do you have any children?

Yes 1 *94.0%*

No *(Skip to q.15a)* . . . 2 *6.0%*

b. If yes, please indicate a. the age of each child, b. the sex of each child, and c. where each child lives (living at home, living away from home most of the year, or not living at home).

	a. Age	b. Sex *(Circle one)* Male	Female	c. Where children live *(Circle one)* Lives at home	Away from home most of year (Example, at school)	Does not live at home
Child #1	_____	1	2	1	2	3
Child #2	_____	1	2	1	2	3
Child #3	_____	1	2	1	2	3
Child #4	_____	1	2	1	2	3
Child #5	_____	1	2	1	2	3
Child #6	_____	1	2	1	2	3
Child #7	_____	1	2	1	2	3
Child #8	_____	1	2	1	2	3
Child #9	_____	1	2	1	2	3
Child #10	_____	1	2	1	2	3
Child #11	_____	1	2	1	2	3
Child #12	_____	1	2	1	2	3

15a. Are there any other persons living in your household?

Yes	1	3.4%
No (Skip to q.16a) . . .	2	96.6%

b. If yes, please indicate a. the age of each person and b. the relation of each person to the family.

	a. Age	b. Relation to family
Person #1	_____	_____
Person #2	_____	_____
Person #3	_____	_____
Person #4	_____	_____

16a. Do you have any pets?

Yes	1	60.3%
No (Skip to q.17)	2	39.7%

b. If yes, please indicate a. the number of pets you have and b. where each pet is usually kept (inside the house or outdoors).

	1	2	3	4	5	6	7	8
Dog	83.7%	14.9%	.9%	.2%	.1%	.1%		.1%
Cats	75.1%	18.1%	6.1%	.6%				
Other (Specify)								
_____ _____	_____		1	2				
_____	_____		1	2				
_____	_____		1	2				

17. During the past month, please indicate for each of the occasions listed below: a. how frequently you had guests, and b. the usual number of guests present on each occasion.

Occasion	a. Number of times	b. Usual No. of guests
Dinner	2.476	3.475
Cards, crafts, or clubs	2.119	3.368
Social visit only	5.706	3.349
All other occasions	3.141	4.947

Section C - Your Preferences

KITCHEN APPLIANCE FEATURES

REFRIGERATORS:

21a. Below is a list of refrigerator features:

	1st	2nd	3rd	4th	score
01. Completely automatic defrosting	53.9%	20.6%	13.5%	4.5%	308.9
02. Automatic ice maker	3.1%	16.4%	18.8%	20.2%	119.4
03. Larger freezer space	28.7%	28.6%	12.7%	4.8%	230.8
04. Ice water dispenser in door	1.1%	2.6%	5.5%	8.2%	31.4
05. Larger refrigerated space	7.7%	15.3%	18.0%	9.7%	122.4
06. Rollers for easy moving	3.5%	10.6%	18.9%	21.3%	103.1
07. Quiet running	1.0%	3.8%	6.3%	9.3%	37.3
08. Choice of color	.3%	.8%	3.5%	9.9%	20.5
09. Choice of door style	.7%	1.3%	3.6%	12.2%	26.1

If you were able to select a refrigerator for your quarters, indicate which four of the refrigerator features above would be most important to you by placing the number corresponding to the feature in the appropriate space below.

_01_ Most important feature

_03_ Second most important feature

_05_ Third most important feature

_02_ Fourth most important feature

b. If you selected item 09 in Question 21a (choice of door style) as important, which door style would you select? *(Circle one)*

Single door with inside door for freezer, ... 1	1.7%
Double door with freezer on top, ... 2	25.2%
Double door with freezer on bottom, or . 3	6.6%
Side-by-side double door style? 4	66.5%

RANGES:

22a. Below is a list of range features.

	1st	2nd	3rd	4th	score
01. Oven timer	5.0%	11.6%	12.7%	13.5%	93.7
02. Drawer for pots and pans	3.1%	10.3%	8.7%	9.1%	69.8
03. Glass oven window	5.2%	17.4%	17.9%	11.8%	120.6
04. Surface unit timer	.3%	1.4%	3.3%	3.7%	16.9
05. Choice of color	.6%	1.6%	3.2%	5.4%	19.0
06. Back edge splatter panel	2.2%	10.0%	11.0%	9.7%	70.5
07. Ceramic cook top surface	2.3%	7.1%	6.8%	5.5%	49.6
08. Self-cleaning oven	64.7%	14.7%	8.1%	5.4%	324.5
09. Timer for appliance outlet	.2%	1.2%	2.2%	4.0%	12.8
10. Rotisserie in oven	.5%	5.0%	6.0%	6.4%	35.4
11. Style of range	5.5%	7.9%	9.9%	12.3%	77.8
12. Size of range	10.5%	11.7%	9.7%	13.2%	109.7

If you were able to select a range for your quarters, indicate which four of the range features above would be most important to you by placing the number corresponding to the feature in the appropriate space below.

08 Most important feature

03 Second most important feature

12 Third most important feature

01 Fourth most important feature

b. If you select item 11 in Question 22a (style of range) as important, which style would you prefer? *(Circle one)*

Free standing range, or 1	19.2%
Oven and cooktop built into the kitchen cabinets? 2	80.8%

c. If you selected item 12 in Question 22a (size of range) as important, which type of range would you prefer? *(Circle one)*

Single oven, oven below cooktop 1	9.7%
Single oven, oven at eye level 2	19.0%
Double oven, side by side, or 3	7.7%
Double oven, one at eye level and one below cooktop? 4	63.7%

OTHER MATERIALS AND FEATURES

CEILING FINISHES:

23. Below is a list of ceiling finishes:

    1. Smooth finish
    2. Sand finish
    3. Textured or swirled finish
    4. Acoustical tile or panels

Suppose you were able to select a ceiling finish for each room in your quarters. For each type of room listed below, place the number corresponding to your choice of ceiling finish (from the list above) in the space provided.

Type of room	1	2	3	4
a. Bedrooms	33.3%	11.1%	29.7%	25.8%
b. Bathrooms	63.8%	6.2%	12.7%	17.3%
c. Family room	17.0%	9.3%	22.2%	51.6%
d. Living room	22.7%	9.7%	40.1%	27.5%
e. Dining room	29.2%	10.5%	39.6%	20.6%
f. Kitchen	72.3%	5.4%	8.7%	13.6%
g. Hallways	36.0%	13.7%	29.2%	21.1%

WALL FINISHES:

24. Below is a list of wall finishes:

1. Smooth finish (painted)
2. Sand finish (painted)
3. Textured finish (painted)
4. Wood paneling
5. Patterned finish (such as washable wall-paper, vinyl patterned panels, etc.)
6. Plastic tile
7. Ceramic tile

Suppose you were able to select a wall finish for each room in your quarters. For each type of room listed below, place the number corresponding to your choice of wall finish in the space provided.

Type of room	1	2	3	4	5	6	7
a. Bedrooms	47.1%	7.9%	13.2%	11.3%	19.9%	.3%	.4%
b. Bathrooms	14.2%	1.6%	1.3%	1.6%	11.7%	10.9%	58.8%
c. Family room	11.0%	2.2%	4.0%	77.6%	4.9%	.2%	.2%
d. Living room	33.8%	7.4%	14.6%	35.3%	8.7%	.2%	.1%
e. Dining room	36.7%	7.8%	13.9%	24.1%	16.6%	.5%	.3%
f. Kitchen	48.1%	1.8%	3.1%	5.6%	26.9%	6.9%	7.6%
g. Hallways	44.9%	8.0%	11.9%	20.7%	12.8%	.9%	.7%

FLOORING;

25. Below is a list of types of flooring:

1. Asphalt tile
2. Vinyl tile
3. Sheet vinyl
4. Hardwood
5. Ceramic tile
6. Carpeting

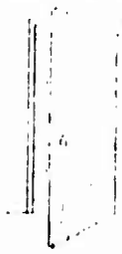
Suppose you were able to select a type of flooring for each room in your quarters. For each type of room listed below, place the number corresponding to your choice of flooring in the space provided.

Type of room	1	2	3	4	5	6
a. Bedrooms	1.6%	4.3%	1.3%	23.6%	.8%	68.4%
b. Bathrooms	6.0%	20.4%	7.2%	1.5%	54.2%	10.7%
c. Family room	4.9%	15.3%	6.5%	21.4%	2.1%	49.9%
d. Living room	1.3%	2.4%	.8%	20.5%	.6%	74.3%
e. Dining room	4.3%	12.2%	3.8%	28.4%	2.5%	48.7%
f. Kitchen	14.6%	45.9%	16.4%	2.3%	13.9%	6.9%
g. Hallways	3.8%	9.2%	2.7%	23.1%	1.6%	59.6%

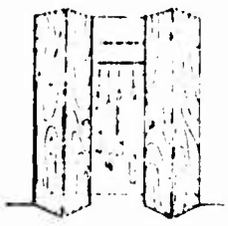
OTHER MATERIALS AND FEATURES:

In each of the following questions, several styles of household items are listed. For each question, circle one number corresponding to the style which you prefer most.

26. Which of the following closet door styles do you prefer? *(Circle one)*



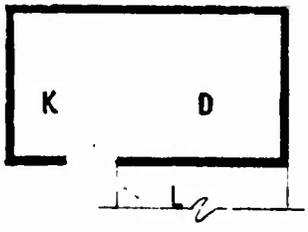
19.5%
Standard door 1



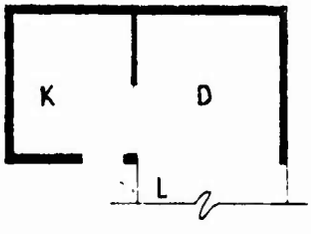
27.5%
Bifold 2

52.9%
Side-sliding 3

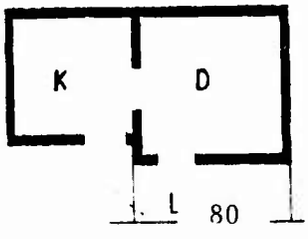
27. Which of the following kitchen-dining room relationships do you prefer? *(Circle one)*



10.3%
Dining area 1



25.3%
Dining "L" 2



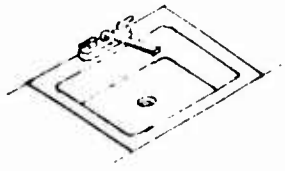
64.4%
Dining Room 3

28. Which of the following kitchen-exhaust systems do you prefer? *(Circle one)*

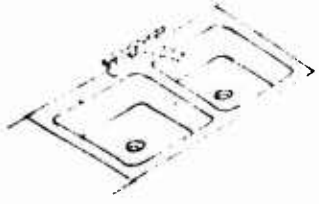
23.1%
Wall style 1

76.9%
Hood style 1

29. Which of the following kitchen sink styles do you prefer? *(Circle one)*

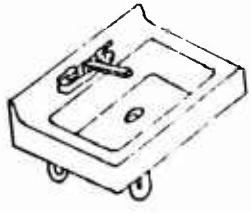


.8%
Single bowl 1

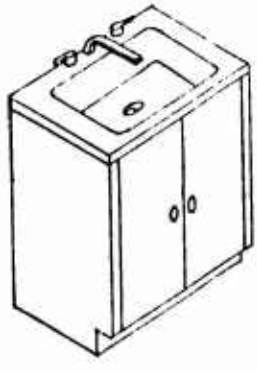


99.2%
Double bowl 2

30. Which of the following bathroom sink styles do you prefer? *(Circle one)*



4.5%
Wall-hung basin 1



95.5%
Basin in vanity 2

31a. In the bathroom, would you prefer . . .

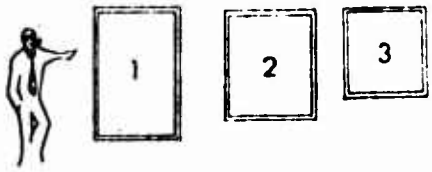
A tub alone, *(Skip to Q.32)* .	1	.6%
A shower stall, or	2	2.1%
A tub and shower combination?	3	97.3%

b. If you selected item 2 or 3 in Question 31a, what style of shower head would you prefer? *(Circle one)*

Fixed head	1	69.1%

Hand-held flexible head .	2	30.9%

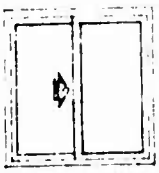
32. Window Height from floor. Would you prefer . . .



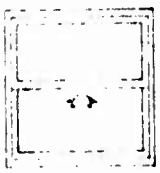
Ankle height, ...	1	15.7%
Knee height, or	2	30.6%
Waist height?	3	53.7%

33. Which one of the following window styles do you prefer? *(Circle one)*

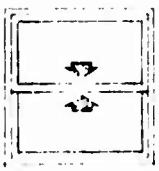
11.4%
Awning style 1



32.0%
Side sliding 2



11.1%
Single hung 3



33.3%
Double hung 4

12.3%
Casement 5

34. If the government were to provide a window covering for <u>all</u> windows in your quarters, which one of the following window coverings would you prefer?

38.6%
Drapes 1

Venetian blinds (occupant supplies drapes or curtains) *40.2%* 2

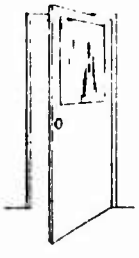
Shades (occupant supplies drapes or curtains) *21.2%* 3

Answer Questions 35 and 36 even if your quarters do not presently have a patio.

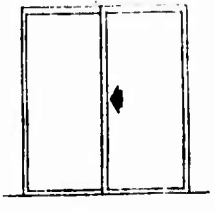
35. Where would you prefer the location of an entrance to the patio?
(Circle one)

From master bedroom . . .	1	*.9%*
From living room	2	*15.9%*
From dining room	3	*21.2%*
From family room	4	*43.0%*
From kitchen	5	*18.9%*

36. Which one of the following patio door styles do you prefer?



12.4%
Standard door with window . 1



87.6%
Sliding glass door 2

37. Below is a list of housing features.

01. Central air conditioning
02. Sidewalks in housing area
03. Patio
04. Carpeting in living room and bedrooms
05. Carport
06. Enlarged living room
07. Enlarged dining room
08. Having eating area in kitchen
09. Area playgrounds (both toddlers and spaces for older children)
10. Storm doors and windows
11. Soundproofing between units (horizontal and vertical)
12. Fenced-in yard (for children and/or pets)
13. Privacy fence between units
14. Other *(Specify)* _____
15. Other *(Specify)* _____

	1st	2nd	3rd	4th	score
1	49.6%	10.9%	7.5%	6.7%	252.8
2	1.7%	3.7%	3.2%	4.1%	28.4
3	.3%	3.5%	5.6%	7.0%	29.9
4	6.5%	12.9%	10.2%	8.5%	89.6
5	4.5%	11.0%	13.1%	13.6%	90.8%
6	6.5%	7.0%	5.7%	4.6%	63.0
7	1.4%	5.2%	5.6%	3.6%	38.0
8	4.1%	7.2%	8.4%	8.0%	69.8
9	2.1%	5.0%	6.4%	6.2%	42.4
10	.7%	2.4%	2.4%	2.6%	17.4
11	9.7%	9.5%	9.3%	7.7%	93.6
12	8.2%	13.5%	12.1%	12.1%	109.6
13	2.5%	5.2%	7.9%	11.4%	52.8

Which of the features above would you most prefer in new housing construction? Indicate your preferences by placing the number corresponding to the most preferred feature, second most preferred feature, etc., in the appropriate space below.

01 Most important feature

12 Second most important feature

11 Third most important feature

05 Fourth most important

Location of Washer and Dryer:

38. Where should the washer and dryer be located? *(Circle one)*

Adjacent to the kitchen in a separate utility room, ... 1	*87.5%*
In the bathroom "closet", or 2	*8.6%*
In the kitchen "closet"? 3	*3.9%*

Interior Paint:

39. In color of wall paint, would you prefer: *(Circle one)*

That the walls be painted in neutral colors (such as off white) so that it is easier to maintain color schemes when moving from place to place, or	1	*79.2%*
That occupants be allowed to select wall colors even though it might create problems when moving in or leaving?	2	*20.8%*

Directions for Improving Family Housing:

40. What do you think family housing should seek to attain first? *(Circle one)*

Improved quality of construction within present space regulations, or	1	*55.7%*
Increased space of living quarters with the present quality of construction?	2	*43.9%*